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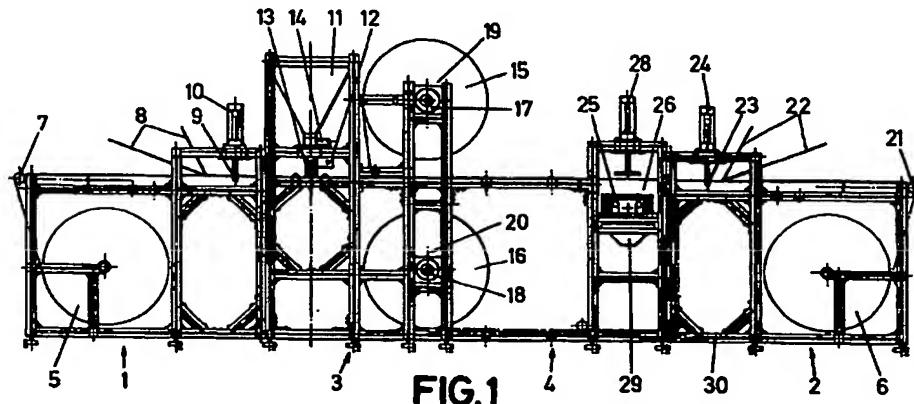
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(54) MACHINE FOR THE FABRICATION OF CONTAINERS WITH CONSUMABLE CONTENT

(57) Machine for manufacturing consumable goods containers, consisting of a structure in which four modules are located, two supply modules (1) and (2), one dosage module (3) and the other a cutting module (4). It includes thermo-plastic material reels (5) and (6) of a variable band width, provided with winding means (7)

and (21) and heating means (8) and (22), as well as shaping matrixes (9) and (23) that function when heated under pressure and result in concave shapes on the bands applicable as halves of the containers to be obtained.



EP 1 074 471 A1

Description**PURPOSE**

[0001] This descriptive report refers to a Utility Model request regarding a machine for manufacturing consumable goods containers, the obvious aim of which lies in allowing the manufacture of containers in series which are subsequently filled with consumable goods, such as infusions, medicines, etc. and then the container previously filled with the consumable goods is closed.

SCOPE

[0002] This invention is applied in the industry dedicated to the manufacture of containers, specifically the industry dedicated to the manufacture of machines for manufacturing containers that simultaneously fill the container being manufactured and then make it watertight.

HISTORY

[0003] The applicant has knowledge of the existence at present of a number of containers intended to be used as consumable goods containers, as well as applicable machines to manufacture them.

[0004] However, he is not aware of the existence of an invention that, although it has the same objective, has a much quicker manufacturing process, is able to generate numerous containers simultaneously which, at the same time, can have different shapes and is able to manufacture said containers in accordance with the inclusion of the pertinent molding and cutting matrixes that form a part of the machine itself.

DESCRIPTION OF THE INVENTION

[0005] The machine for manufacturing consumable goods containers proposed by the invention is presented in itself as an obvious novelty within its structural unit, as it unites in one invention only the structure processes of the container filled with the consumable goods of the container previously shaped, as well as the closing and stamping of the previously manufactured and filled container, thus carrying out a continuous and synchronized manufacturing process.

[0006] More specifically, the machine for manufacturing consumable goods containers, purpose of the invention, is constituted based on a frame, chassis or structure in which four modules are housed. Two of these modules are intended for the supply providing the raw materials for shaping the container in two halves and separately, counting on the appropriate means for carrying out said shape with heat and pressure, and at the same time having a dosage module containing the consumable goods and the means for its dosage and

filling in one of the two halves of the manufactured container. Lastly, there is a cutting module with suitable means for carrying out the sealing by means of welding the two halves, as well as for final stamping of the container.

[0007] The raw materials used for shaping supplied by the two previously mentioned supply modules may be thermoplastic in the form of reels with an variable band width.

DESCRIPTION OF THE DRAWINGS

[0008] In order to complement this description and to help with a better understanding of the characteristics of the invention, attached to this descriptive report and as an integrating part is one sheet of drawings in which the following has been represented in an illustrative and non-limiting way:

Figure 1 corresponds to a side elevation view of the invention, regarding a machine for manufacturing consumable goods containers.

Figure 2 shows a floor view of the object represented in figure 1.

PREFERRED PERFORMANCE OF THE INVENTION

[0009] In view of the above figure it can be seen how the machine for manufacturing consumable goods containers is made up of a train of linked modules, in each of which a part of the manufacturing process is made. The modules are integrated in a structure or metallic frame formed or obtained by aluminum or similar profiles, including four modules (1), (2), (3) and (4), two of which (1) and (2) are supply modules. Module (3) is for dosage application and the fourth module (4) is intended to be used as a cutting module.

[0010] The supply modules (1) and (2) are equal and are located at the opposite ends of the machine. They are called supply modules as they are intended to contain identical plastic material reels (5) and (6) applicable as raw material for manufacturing the body of the containers. In other words, they contain a plastic sheet intended to shape the containers based on the use of heat. The mentioned reels containing the sheets have a variable band width and are turned by means of two axes, including a counterweight for breaking.

[0011] A plastic material reel (5) is located in the supply module (1) the free end of which is connected to a conventional type pneumatic feeder (7) that slowly coils it and that, at the same time, has two components, one mobile that marks the feed which can be regulated and another fixed that maintains the band secure in a precise way.

[0012] Next are located some nozzles (8) that expel hot air in order to raise the temperature of the band until reaching a heat stage varying between 90°C and

100°C. This step is previous to the shaping of the cavities to be made by the containers.

[0013] The nozzles (8) are directed towards the center of a shaping matrix (9) provided with two homologous male and female components, as it is this zone where the suitable temperature for shaping under pressure is to be reached. It should be indicated that by means of operating a pneumatic cylinder (10) acting on the tongue and groove matrix (9), the cavity engraved on the previously heated band is finally shaped, resulting in a certain concave form logically in accordance with the design of the container to be manufactured.

[0014] In this operation the heat and pressure of a matrix are combined and centering drills are also obtained.

[0015] Inside the supply module (1) there are cooling means of the matrix (9) so that the plastic band leaves the module heat-free. It is driven by means of rollers of the feeder (7) itself. A hopper (11) has been provided in the dosage module (3) inside which the consumable goods are placed. This hopper (11) is suspended by means of springs and has a vibrating movement in collaboration with a valve.

[0016] The plastic material band with the pre-engraved cavities is located on the lower part and the hopper provided with a commercial origin is found next to a volumetric dosimeter (12) which it supplies, consisting of a plate having an alternating swing that permits the right amount of the product to pass through. This falls inside other hoppers (13) with a smaller volume and variable number depending on the cavities engraved on the band, resulting in the simultaneous filling of said cavities.

[0017] The invention has an optic reader (14) intended to record the centering drills made on the band by the shaping matrix (9) and which, in turn, operate the dosimeter (3), specifically the hopper (11), at the right moment to carry out correct loading of the cavities.

[0018] In the dosimeter module (3) there are reels (15) and (16) that pick up the surplus of the plastic material coming from the reels (5) and (6) of said supply modules (1) and (2) for subsequent recycling. This is possible thanks to two pneumatic winding machines (17) and (18) that, due to the low turning couple developed, maintain the bands taut.

[0019] Extraction from the recycling reels (15) and (16) mentioned above, included in the dosimeter module, is made by removing both pneumatic cylinders (19) and (20) that leave the reels loose so that the operator can remove them.

[0020] There is a reel (6) with identical characteristics in the supply module (2) located at the end of the machine diametrically opposite the first one (1), which is associated to another pneumatic feeder (21) provided with two components, one fixed and the other mobile, that at the same time move and secure the band.

[0021] The invention has some heating nozzles (22) to facilitate shaping the raw material. This is caused

when another shaping matrix (23) similar to the one located in the previous supply module (1) enters into action, driven likewise by a pneumatic cylinder (24). One or various cavities are generated in the hot band, which will later be the cavities that shape the other half of the container to be shaped and have centering drills.

[0022] In the so-called cutting module (4), during the last stage of the manufacturing process, the two bands coming from their respective supply modules (1) and (2) are found and, therefore, pertaining to the corresponding reels (5) and (6), already duly shaped as verified above and one of them, with the engraved cavities, filled with the consumable goods.

[0023] The invention has suitable means to permit, firstly, superposition in the space of both bands and their physical contact and then carry out their centering by means of guide dies or centering elements that coincide exactly with the mentioned drills made in the bands.

[0024] In the fourth cutting module (4) there is a tool or welding matrix (25) operated by ultrasound, including a cutting matrix (26) or punch, with the parts (25) and (26) integral by means of a pneumatic cylinder (27) that moves one or the other in the horizontal direction with the help of springs, in order to invert the movement, based on the operation to be carried out.

[0025] The tools or matrixes (25) and (26) are operated with the help of the pneumatic cylinder (28) located vertically. This transmits a strong pressure to the plastic material bands which, as has been described above, are located centrally at this point and in close physical contact.

[0026] Two consecutive operations are made in the cutting module (4). One consists in ultrasound welding of the two halves of the container resulting from the respective supply modules as, firstly, the welding matrix or tool (25) is operated by means of the vertically placed pneumatic cylinder (28) and stamping of the part when, after operation of the two pneumatic cylinders (27) and (28) has ceased, the springs move the matrixes inversely and the cutting module (26) is placed in a suitable position.

[0027] The vertically placed pneumatic cylinder (28) applies pressure to the die and the resulting part falls through a ramp (29) into a container.

[0028] The whole set is integrally supported in a structure (30), preferably metallic, manufactured in aluminum profiles.

50 Claims

1. Machine for manufacturing consumable goods containers which, on consisting of or provided with a number of conventional automated devices, each with a specific purpose within the process associated to the machine itself, is characterized by the fact that it consists of four basic modules, two of which are supply modules (1) and (2) from where

the shaping raw material of the containers departs. It contains suitable means for shaping the container, including a dosage module (3) by means of which the containers are filled with the consumable goods and a cutting module (4) provided with closing and stamping means of the containers obtained. The four modules (1), (2), (3) and (4) forming a structural unit are located on a frame or chassis.

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2. Machine for manufacturing consumable goods containers, according to the first claim, characterized by the fact that the supply modules (1) and (2) occupying separate positions in the machine are equal and contain thermo-plastic material reels (5) and (6) with a variable band width. The reels (5) and (6) are associated to winding and conduction means (7) and (21) towards two heating devices (8) and (22) which, in turn, precede both shaping matrixes heated under pressure (9) and (23), resulting in concave forms on the bands of the reels (5) and (6) making up the halves of the containers.
3. Machine for manufacturing consumable goods containers according to the above claims, characterized by the fact that the dosage module (3) has a hopper (11) with the consumable goods, provided with a vibrating movement by suitable means. It is associated to a dosimeter (12) provided with an optical reader (14) which, once located correctly as regards the hopper (11) and the dosimeter (12), one of the thermo-plastic material bands sends a signal to the dosimeter (12) and this, by means of moving, collects the consumable goods from the hopper (11) and deposits them in the engraved cavities on the band through an indeterminate number of hoppers with reduced sizes (13).
4. Machine for manufacturing consumable goods containers according to the above claims, characterized by the fact that the cutting module (4) has suitable means for centering and superpositioning as regards the two thermo-plastic material bands, confronting their respective cavities and containing, furthermore, a welding tool (25) and a cutting matrix (26) that act consecutively on the bands, giving rise to the consumable goods containers in said cutting module (4).

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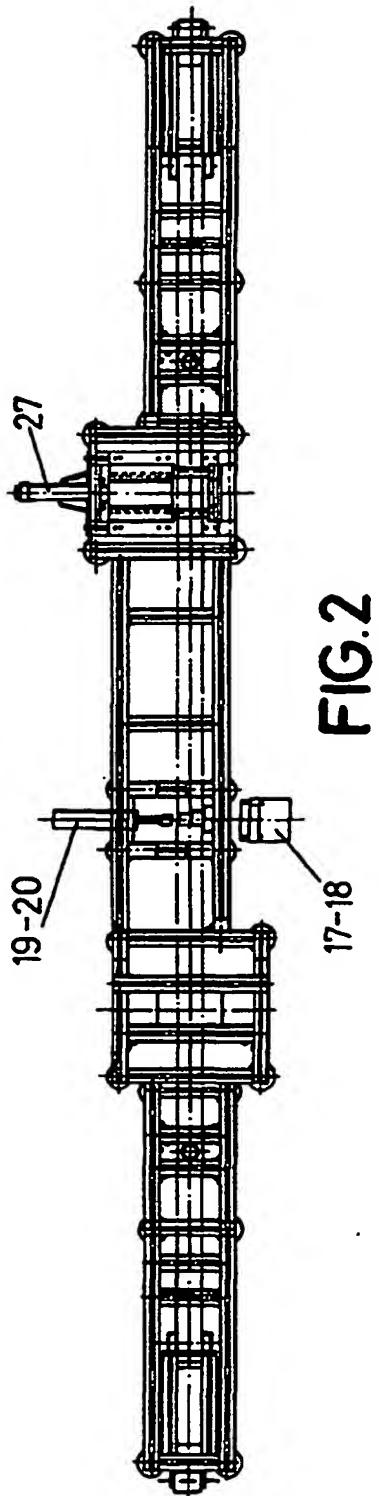
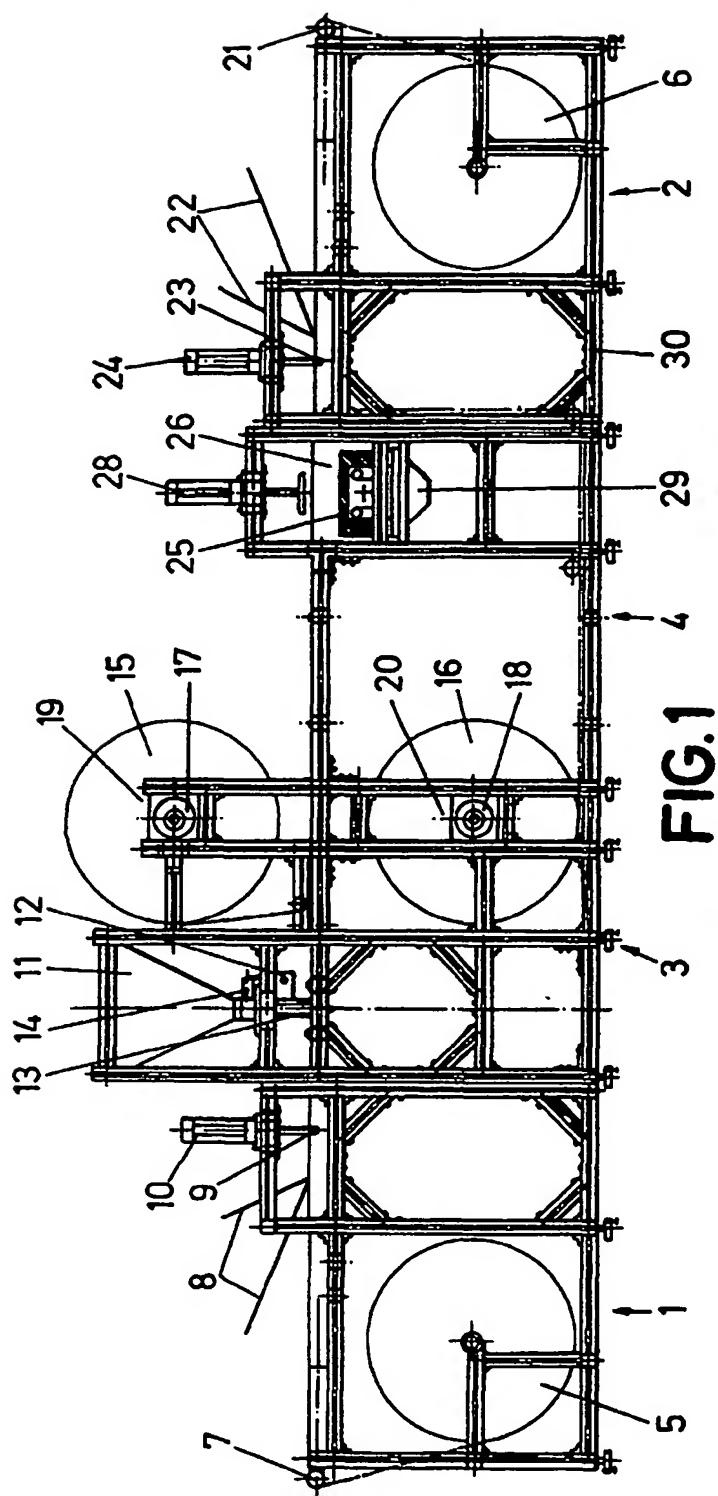
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 99/00341

A. CLASSIFICATION OF SUBJECT MATTER IPC 6: B65B9/04 ; B29C51/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 6: B65B9/04;B29C51/00		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (names of data base and, where practicable, search terms used)		
EPODOC; WPI; PAJ; CIBEPAT		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3837782 A (Meissner et al.) 24.09.1974, column 3, line 10 - column 10, line 55; column 13, lines 43 - column 13, line 63; figures 1, 4-18, 20-23, 25,30.	1-4
A	US 3918237 A (Stark et al.) 11.11.1975, the whole document	1-4
A	US 3808772 A (Turtuchan) 07.05.1974, the whole document	1,2,4
A	US 3659993 A (Brown, Jr) 02.05.1972, the whole document	1-
<input type="checkbox"/> Further documents are listed in the continuation of Box C.		<input checked="" type="checkbox"/> See patent family annex.
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"B" earlier document but published on or after the international filing date</p> <p>"C" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"D" document referring to an oral disclosure, use, exhibition or other means</p> <p>"E" document published prior to the international filing date but later than the priority date claimed</p> <p>"F" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"G" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"H" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"I" document member of the same patent family</p>		
Date of the actual completion of the international search	Date of mailing of the International search report	
17 January 2000 (17.01.00)	20 January 2000 (20.01.00)	
Name and mailing address of the ISA/	Authorized officer	
S.P.T.O Fax/fax No.	Telephone No.	

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 Information on patent family members

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